City of Victoria
Engineering Department

Water and Environment Division

Strategic Plan
2003 to 2007

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Background

The purpose of this plan is to develop an operational response to the objectives that have been identified by City Council in the Corporate Strategic Plan and the Capital Regional District's (CRD) Core Area Liquid Waste Management Plan.

The Engineering Department, Water and Environment Division is responsible for the delivery of the most fundamental portion of the municipal services, which includes the sanitary sewer collection system, the storm sewer collection system, the water distribution system and related environmental programs.

Our infrastructure programs focus on condition and capacity, while the environmental programs are specifically designed to protect human health and the environment from the impacts of transporting liquid wastes.

Over the past several years Council has increased funding in support of the Water and Environment Division's infrastructure and environmental initiatives. There have been improvements in infrastructure reinvestment and environmental programs, which include:

- ✓ Adoption of the CRD Storm Water Bylaw.
- ✓ Development of best management practices and codes of practice.
- ✓ Completion of the Speed Avenue Storm Water Interceptor Project.
- ✓ Continuation of the Source Control Program.
- ✓ CCTV condition analysis of the larger diameter mains in the Central Business District.
- ✓ Implementation of a Lateral Relining Program.
- ✓ Support for the Victoria Harbour Pollution Abatement Program.

We are moving forward in many areas. Therefore, this report will look at continuous improvements and where we need to focus our efforts in the next five years.

Engineering Department – Vision Mission Statement

Vision

" Together, provide quality works and services for the community ..... today and tomorrow".

Mission

To deliver services and manage the municipal infrastructure in an innovative, cost effective and responsive way for the residents, businesses and other clients.

We are dedicated to providing and improving solid and liquid waste collection; storm water disposal; safe buildings, drinking water and transportation systems along with responsible environmental stewardship.

Corporate Strategic Plan

The relevant portions of the 2001 Corporate Strategic Plan as they relate to the mandate of the Water and Environment Division.

Our Vision

- *Victoria is blessed with environmental riches of land and sea. Protection and stewardship of our natural environment is key to maintaining our exceptional quality of life.*

Our Mission

- *The City of Victoria is committed to the social, economic, cultural and environmental well-being of the community.*

Strategic Directions

"Building Our City"

- means investing in social & physical infrastructure, which is fundamental to the health of our city and our citizens' quality of life.

- Physical Infrastructure - Maintaining and enhancing infrastructure
  - ✓ Sewer and Water – to plan and invest appropriately in underground infrastructure.

"Preserving the Environment"

- requires balancing social and economic activities with concern for the natural and built environment to ensure the sustainability of our urban community.

- Urban Infrastructure – Maintaining an excellent built environment.
  - ✓ Sewer and Storm Water Quality - to manage sewer and water services in balance with the natural environment.

- Natural Environment – Preserving and enhancing our natural environment.
  - ✓ Harbour & Waterways – to work towards shoreline protection, remediation and pollution abatement.

"Responsible Governance"

We are accountable for delivering services efficiently and effectively.

- Civic Participation – Inviting citizens to contribute their ideas and opinions through effective dialogue

  - ✓ Input and Feedback – to develop diverse opportunities for community input and feedback.

- Service Excellence – Provide effective, coordinated and accessible public services.

  - ✓ Positive Work Environment – to promote and foster a positive work environment by encouraging creativity and innovation. To strengthen cooperation and communications while building flexibility into our organizational structure

  - ✓ Continuous Improvement – to regularly review and streamline work processes so that we provide quality services to the public that are efficient, cost effective and easy to access.

  - ✓ Technology – utilize technology to enhance our service provision.

Storm Drain Collection System

Program Objective

The objective of this program is to supply facilities throughout the Municipality for the collection and disposal of storm water runoff.

This program will ensure the collected storm water is disposed of appropriately, thus minimizing any impact on the environment as a result of quantity or quality.

The collection, transmission and disposal of storm water is fundamental in providing the residences and businesses with a safe and livable community.

Program Description

Due to the critical nature of this service, this program will ensure that the storm drainage collection system is operated and maintained in a manner, that will:

- ✓ Minimize the potential of system failure.
- ✓ Collect storm water in sufficient quantities to prevent flooding.
- ✓ Manage storm water quality.

Failure of the system may result in excess storm water entering the sanitary sewer system resulting in sewage spills and area wide flooding. System failures could affect the health and safety of our community and discourage growth and development.

As rainwater carries suspended and dissolved solids, this program will manage storm water quality to minimize the potential detrimental effects to the environment and public health. These objectives support the Corporate Strategic Plan in the area of 'Building Our City' and 'Preserving our Environment'.

Operational criteria will be based on sound engineering practices, Water Environment Federation manual of practice and the Core Area Liquid Waste Management Plan.

This program is funded through the municipal tax levy.

Storm Drain Inventory

	Quantity	Unit Cost	Subtotal
Manholes	2,652	$5,000	$13,260,000
Laterals	13,500	$4,300	$58,050,000
Mains	235,000 m	$700 /m	$164,500,000
Lift stations	4	$160,000	$640,000
Outfalls	68	$60,000	$4,260,000
Catch Basins	10,000	$2,700	$27,000,000
		Total	**$267,710,000**

SD Operation and Maintenance Programs

Programs	Description	Activities	Cost
Engineering	Provide supervision and engineering services for all aspects of the operation and maintenance of the SD collection system	-customer service -project design / estimating -contract development & admin. -field supervision -training	$177,008
Lift Stations	Provide regular inspection, maintenance and repairs	-annual overhaul of pumps -regular inspection and cleaning of stations -regular maintenance -repairs as required	$22,225
Catchment Area Management	Work to reduce storm water contaminates from entering our system and impacting the environment	-administer storm water bylaw -develop codes of practice -monitor storm water quality -public education	$80,129
Laterals	Repair and maintain lateral connections	-clear and clean as required -repair and replace -reimburse plumbing claims -inspect and view	$141,500
Test and Clear	Check on the condition of lateral connections for possible re-use	-this activity is based on customer requests	$1,499
Investigations	Conduct condition assessment and investigate sources of contamination and flooding complaints	-CCTV inspections -source control program -oil spill investigation	$51,836
Catch Basins	Clean and maintain CB's and CB laterals on a regular program	-clean basin twice annually -repair or rebuild defective basins & lateral connections -convert to side inlet in flood prone areas	$148,713
SCADA	Provide, maintain and enhance emergency alarm and pump monitoring systems	-24 hr electronic monitoring -emergency alarm response -repair and maintenance of 4 SCADA - install wireless communication	$38,010

Manholes	Repair and maintain manholes as required	-repair manholes -replace as required -install manholes as required to improve safe access to mains	$47,940
Cleaning	Regular program of cleaning and inspection	-clean use hydraulic flushing -clear roots with mechanical rodder -clean and assist CCTV inspection	$101,746
Mains	Respond to mains that are blocked or damaged and require immediate maintenance	-repair sections of mains -unplug mains as required -maintain outfalls -oil spill response	$59,515
Emergencies	Respond to calls and complaints of flooding during intense rain storms	-support of the after hours PW service program	$4,848
		Total	$874,969

SD Capital Programs

Programs	Description	Activities	Cost
Eliminate Cross Connections	Eliminate SS cross connections that are discovered under the source control program	-reconstruct or install laterals	$125,000
Main Rehabilitation	Rehabilitate existing mains in-order to significantly extend their life expectancy	-reline, repair or replace soecific portions of a SD main	$350,000
Main Replacement	Replace mains that are undersized or have gone beyond their useful life and are at various stages of collapse	-completely replace significant lengths of undersized or deteriorated pipe	$450,000
Lateral Installation	Install lateral connections as requested by developers and property owners	-respond the customer request for new laterals -laterals are paid for by the owner / developer under a general permit	$192,662
		Total	$1,117,662

SD - Program Enhancements

In order to meet the objectives of the Corporate Strategic Plan and the Core Area Liquid Waste Management Plan the Storm Drain program will require additional expenditurein the next five years the areas of:

- ✓ Appropriate levels of investment in the physical infrastructure.
- ✓ Environmental protection / pollution abatement.

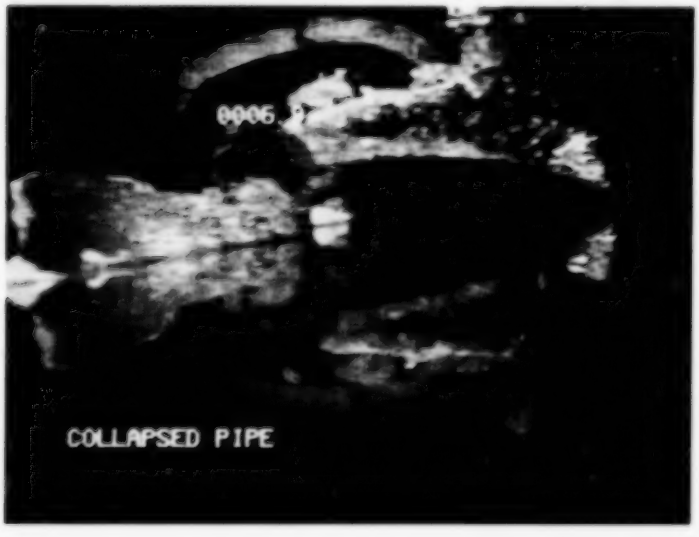
Physical Infrastructure

The National Research Council of Canada's recommendation for major utilities, is an annual expenditure of 1% of the total asset in capital improvement in-order to effectively maintain the integrity of the collection system. This rate of expenditure is equal to a lifecycle of 100 years.

With SD mains having a replacement value of over $164 million dollars the replacement and rehabilitation programs will need to be increased from the current levels of $800,000 to $1,600,000 over the next five years.

Recommended increase in capital expenditure:

	Current	2003	2004	2005	2006	2007
Replacement	$350,000	$350,000	$425,000	$550,000	$700,000	$800,000
Rehabilitation	$450,000	$450,000	$525,000	$650,000	$700,000	$800,000
Total	$800,000	$800,000	$950,000	$1,200,000	$1,400,000	$1,600,000



Environmental Protection and Pollution Abatement

Much of our attention over the last few years has turned towards the development and implementation of a comprehensive Storm Water Quality Management Plan (SQMP) to protect the inland marine environment. Part of the development of the plan included a pilot project involving Cecelia Creek and the Burnside Community Association. This project has proven that multiple physical barriers along with consultation and education can be very effective in improving storm water quality.

The Water and Environment Division has recently completed work on a comprehensive SQMP with the help of one of our consultants. This plan follows the principles that are outlined in the National Guide to Sustainable Infrastructure as well as the B.C. Government's guide book for storm water planning.

The overall objective of the plan is to meet our obligation under the Liquid Waste Management Plan (LWMP). Therefore, it is our intention to work towards meeting the Marine Sediment Quality Guidelines (MSQG) for chemical contaminates, as adopted by the CRD, and swimming water quality standards for coliform concentrations in the receiving waters.

The key components of the SQMP are:

- ✓ Watershed Based (Catchment Area) Management.
- ✓ Elimination of Cross Connections.
- ✓ Conveyance Controls.
- ✓ End of Pipe Treatment.

The following enhancements are required in the Operation/Maintenance and Capital programs in order to address the key components of the SQMP.

Watershed Based Management - Operational

This portion of the plan is directed towards ensuring that chemical contaminates and other materials do not enter the drainage system at source. The elements of watershed management include:

- ✓ Enhancement of the Storm Water Bylaw to include Codes of Practice.
- ✓ Implementation, coordination and monitoring of Best Management Plan's (BMP's).
- ✓ Develop and enforcement of Codes of Practice.
- ✓ Public education.
- ✓ Developing partnerships with Community Associations and government agencies.
- ✓ Testing and sampling.

Eliminate Cross Connections - Capital

When sanitary sewer to storm sewer cross connections, or overflows, are located, we try to correct the problem as quickly as possible. Unfortunately, due to the age and condition of the system, we find more problems then funding will allow us to resolve. The current level of funding has recently been decreased to $100,000. However, a more appropriate level of expenditure would be $150,000 annually.

Conveyance Control / Catch Basins – Capital

In order to deal more effectively with contaminated street wastes, our existing catch basins need to be modified with deeper and wider pots, which are capable of accommodated a trapping hood. These pots are more effective than our current design, and will reduce the amount of Total Suspended Solids (TSS) and known contaminates from washing off the roads and into the SD system. These contaminates may include Arsenic, Cadmium, Lead, Zinc and Light and Heavy Polycyclic Aromatic Hydrocarbons.

Priority would focus on existing pots that have deteriorated and require repair and are located along arterial streets or in industrial and commercial zones that are located in an inland waters catchment area.

Recommended increase in capital expenditure:

	Current	2003	2004	2005	2006	2007
No. of basins replaced	0	20	40	60	80	100
Funding required	$0	$50,000	$100,000	$150,000	$200,000	$250,000

Storm Water Treatment – Capital

The last barrier prior to the storm water being discharged to the marine environment is treatment using storm water rehabilitation technology. These devises are designed to remove floatables, reduce TSS and reduce chemical loading (non-point source pollution).

There are currently 12 outfalls that have been identified under the CRD Storm Water Quality Survey, which require remedial action.

Recommended increase in capital expenditures:

	Current	2003	2004	2005	2006	2007
No. of rehab. units	0	1	2	3	3	3
Funding required		$175,000	$400,000	$400,000	$400,000	$400,000

Sanitary Sewer Collection Systems

Program Objective

This program is designed to protect the environment and human health from the impacts of liquid wastes (sewage) generated as a result of human occupation and development.

The safe collection, transmission and disposal of sewage is fundamental to the health, safety, and vitality of the community and the surrounding environment.

Program Description

Due to the critical nature of this service delivery, this program will ensure that the sewage collection system is operated and maintained in a manner, that will:

- ✓ Minimize potential system failures.
- ✓ Collect sewage in sufficient quantities to meet the needs of the property owners and protect the health of the community.

Failure of this program will effect the health and livability of our community, have a significant impact on the environment and will effect our ability to grow and develop.

These objectives support the Corporate Strategic Plan in the area of 'Building our City' and 'Preserving our Environment'.

Operational criteria is based on established engineering practices, Water and Environment Federation (WEF) Manual of Practice, the Core Area Liquid Waste Management Plan, Provincial Government Municipal Sewage Regulations, Provincial Environmental Regulations and the Federal Fisheries Act.

This program is fully funded through a combination of user fees and a frontage tax.

Sanitary Sewer Inventory

	Quantity	Unit Cost	Subtotal
Manholes	2,901	$5,000	$14,505,000
Laterals	15,180	$4,300	$65,274,000
Mains	244,000 m	$700 /m	$170,800,000
Lift Stations	11	$160,000	$1,760,000
Flush Tanks	366	$4,000	$1,464,000
			$253,803,000

SS Operation and Maintenance Program

Programs	Description	Activities	Cost
Engineering	Provide supervision and engineering services for all aspects of the operation and maintenance of the SS collection system	-customer service -project design / estimating -contract development & admin. - field supervision training -corporate & data processing recovery	$652,301
Lift Stations	Provide regular inspection, maintenance and repairs	-annual overhaul of pumps -regular inspection and cleaning of 11 stations -regular maintenance and repair	$152,292
Laterals	Repair and maintain lateral connections	-clear and clean as required -repair and replace -reimburse plumbing claims -inspect and view	$459,638
Investigations	Conduct condition assessment and investigate sources of I & I	-CCTV inspections	$81,700
SCADA	Provide, maintain and enhance emergency alarm and pump monitoring systems	-24 hr electronic monitoring -emergency alarm response -repair and maintenance of 11 SCADA sites -prevent or minimize sewage-overflows	$77,289
Manholes	Repair and maintain manholes as required	-repair manholes -replace as required -install manholes as required to improve safe access to mains	$47,325
Cleaning	Regular program of cleaning and inspection	-clean use hydraulic flushing -clear roots with mechanical rodder -clean and assist CCTV inspection	$153,034
Mains Repair	Respond to mains that are blocked or damaged and require immediate maintenance	-repair sections of mains -unplug mains as required	$130,317
Emergencies	After hours response to complaints of sewer problems	-respond to after hour complaints through support of the PW service program	$222,400
Pollution Abatement	To locate sources of environmental pollution and coordinate remedial or abatement strategies.	-oil spill response -pollution investigations -CCTV analysis -coordinate source control program -coordinate I and I program	$64,868
Fiscal Services	Interest paid on capital borrowing		$245,983
		Total	$2,087,058

SS Capital Program

Programs	Description	Activities	Cost
Eliminate overflows / pollution abatement	Eliminate inflow and infiltration	-re-direct SD laterals -provide connections as required -grout joints in mains -flow monitoring -smoke testing	$100,000
Main Rehabilitation	Rehabilitate existing mains in-order to significantly extend their life expectancy	-reline, repair or replace specific portions of a SS main	$495,000
Main Replacement	Replace mains that are undersized or have gone beyond their useful life and are at various stages of collapse	-completely replace significant lengths of undersized or deteriorated pipe	$495,000
		Total	$1,282,662

SS - Program Enhancements

In order to meet the objectives of the new Corporate Strategic Plan and the Core Area Liquid Waste Management Plan the Sanitary Sewer Program will require additional expenditure in the areas of:

- ✓ Appropriate levels of investment in the physical infrastructure.
- ✓ Environmental protection through reduction of Inflow and Infiltration.

Physical Infrastructure

The National Research Council of Canada recommends for major utilities, an annual expenditure of 1% of the total asset in capital improvement in-order to effectively maintain the integrity of the collection system. This rate of expenditure is equal to a 100 year lifecycle.

With SS mains having a replacement value of over $170 million dollars the replacement and rehabilitation programs will need to be increased from the current levels of $990,000 to $1,700,000 over the next five years.

Recommended increase in capital expenditure:

	Existing	2003	2004	2005	2006
Replacement	$495,000	$604,000	$700,000	$800,000	$850,000
Rehabilitation	$495,000	$604,000	$700,000	$800,000	$850,000
Total	$990,000	$1,208,000	$1,400,000	$1,600,000	$1,700,000

Reduction of Inflow and Infiltration

Part of the City's obligation under the Core Area Liquid Waste Management Plan is to address the issue of Inflow and Infiltration (I & I) into the sanitary sewer system.

The sanitary sewer system was not designed, nor was it ever intended, to carry large quantities of rainwater. When rainwater overwhelms the sewer system we experience sewer back ups, overflows into the environment and an increase cost of conveyance as part of the CRD requisition. If I & I is not reduced, then future facilities, such as mains and treatment plants, will have to be designed and constructed large enough to accommodate the flows. This will add considerable cost to related future capital programs.

Although a number of inflow points have been discovered, the current budget is too small to make any appreciable gains. The budget needs to be sufficient enough to:

- ✓ Re-direct SD laterals and catch basins that are connected to the sewer.
- ✓ Provide drainage opportunitiesfor properties that are incorrectly connected.
- ✓ Install SD mains to catch basins, that are connected to the sewer system.
- ✓ Grout joints in sewers to reduce infiltration.
- ✓ Monitor flow to determine extent of I & I.
- ✓ CCTV main inspection.

Capital Requirements

	Current	2003	2004	2005	2006
I & I program	$100,000	$125,000	$150,000	$200,000	$250,000

Water Distribution System

Program Objectives

To deliver clean, safe and aesthetically pleasing, potable water, free of any pathogenic organism. The water is for the purpose of domestic consumption and fire fighting.

The delivery of clean water, in sufficient quantities, is the foundation for health, growth, safety and economic sustainability within our community.

Program Description

Due to the critical nature of this service delivery, the objectives within this program are to ensure that the water system infrastructure is operated and maintained in a manner, which will:

- ✓ Minimize the potential of system failure and subsequent loss of service to our customers.
- ✓ Deliver water in sufficient quantities for the purpose of domestic consumption and fire fighting requirements.

Failure of the system will deprive our businesses and residences of this essential service and have an adverse impact of the health and well being of the community.

Operational criteria will be based on sound engineering practices and procedures, American Water Works Association Manuals of Practice, Fire Underwriters Associations Guidelines, Ministry of Health Regulations, Canadian Drinking Water Guidelines and Federal and Provincial Environmental Regulations.

This program is fully funded through user fees.

Waterworks Inventory

	Quantity	Unit Cost	Subtotal
Mains	332,943 m	$410 /m	$136,506,630
Domestic Services	18,843	$2,800	$52,760,400
Fire Services	486	$7,100	$3,450,600
Body Valves	2,552	$1,500	$3,828,000
Hydrants	1,636	$4,100	$6,707,600
PRV Stations	11	$140,000	$1,540,000
Lift Stations	2	$150,000	$300,000
Control Valve Stations	3	$100,00	$300,000
Water Tower	1	$500,00	$500,000
			$205,893,230

Water Operation and Maintenance Programs

Programs	Description	Activities	Cost
Engineering	Provide supervision and engineering services for all aspects of the operation and maintenance of the water distribution system	-customer service -project design and estimating -develop standards and specifications -contract development & admin. -field supervision -budget analysis and control -training	$466,620
Collection	To read all the water meters, tabulate consumption and bill the customer accordingly	-customer service -billing -water utility financial services -special readings -insurance -corporate recovery	$718,994
Purchase of Water	To purchase water at the wholesale rate from the CRD		$5,498,754
Valves	Maintain and repair the water systems body valve	-annual inspection and repair -replace values as required -replace casting as required	$127,025
Mains	Maintain and repair water mains	-main flushing -water tower maintenance -repair mains as required -install air valves	$306,163
Hydrants	Maintain and repair fire hydrants	-annual inspection and repair -replace as required -inspect and repair hydrant valves -paint hydrants as required	$156,130
Services	Maintain and repair service connections	-insulate services -customer service requests -repair and replace -disconnect at main as required -leak investigation	$424,626
Meter and PRV's	Maintain and repair of meters and system control valves	-annual inspection and repair of pressure reducing valves & pumps -repair or replace meters -regular PRV and chart inspections -large meter replacement program	$296,025
SCADA	Provide, maintain and enhance monitoring/alarm systems	-24 hr electronic monitoring of system performance -low / high pressure alarm response -repair and maintenance of 17 sites	$77,915
Lead Services	Replace any lead services that are found in the system	-all the known lead services have been replace, however, a few are discovered annually and require replacement	$3,825
Cross	Identify potential sources of water	-identify cross connection	$66,354

Connection Control	contamination & eliminate any risk	-ensure appropriate protection device are installed and maintained -respond to water quality complaints -administer CCC program	
Investigations	To investigate and monitor system	-waterworks model calibration -PRV design studies -water system monitoring	$83,354
Buildings	To provide funding for the water utility's share of maintaining their work space	-building maintenance -janitorial services	$152,351
Emergencies	After hours response to water system problems	-respond after hour complaints through the support of the PW service program	$68,286
		Total	$8,446,422

Water Capital Program

Programs	Description	Activities	Cost
New Services	Install service connections as requested by developers and property owners	-respond the customer request for new services -services are paid for by the owner /developer under a general permit	$425,000
New Hydrants	To install new hydrants in strategic locations as required by the fire underwriters.	-5 new hydrants in Victoria -3 new hydrants in Esquimalt -install backflow prevention devices as required	$32,800
Main Replacement	Replace mains that are undersized or have gone beyond their useful life and are at various stages of collapse	-completely replace significant lengths of undersized or deteriorated pipe	$1,063,898
Special projects	To undertake special projects related to the improvement or enhancement of the water system	-water system modeling -systematic reconstruction of all the control valve stations	$225,601
		Total	$1,747,299

Water Program Enhancements

The water distribution system is generally in very good shape and well maintained. The only program requiring some enhancement is in the area of capital reinvestment.

Physical Infrastructure

The National Research Council of Canada's recommendation for major utilities, is an annual expenditure of 1% of the total asset in capital improvement in-order to effectively maintain the integrity of the collection system. This rate of expenditure is equal to a 100 year lifecycle.

With the water distribution system having a replacement value of over $136 million, the main replacement progam will need to be increased from the current levels of $1,063,898, to approximately $1,400,000 over the next five years.

Recommended increase in capital expenditure:

	Existing	2003	2004	2005	2006
Replacement	$1,063,898	$1,196,700	$1,296,700	$1,396,000	$1,400,000

The Future Divisional Structure

As the 21st Century unfolds, the Water and Environment Division is facing a number of significant challenges. These challenges include an aging infrastructure, the need for appropriate levels of reinvestment, decreasing workforce through retirement with the subsequent loss of experience and knowledge, increasing Environmental sensitivity, and meeting changing customer expectations. With these challenges, the Division will be obliged to closely examine how we deliver our services in the future.

The following is a number of visionary observations regarding the future structure of the Division. These observations/objectives should be used as a planning tool in making strategic organizational decisions.

I believe that in the next 5 to 10 years .....

The level of staffing will probably be, approximately, the same as currently exists. However, as we strive to do significantly more work with the same staffing levels, the focus will be on staff development and re-deployment. Some of our existing tasks will become redundant with changing technologies and increased efficiencies requiring less people, while future challenges will likely require more staff to focus on tasks and assume responsibilities on a variety of issues that are only starting to emerge at this time.

Utility Manager

- ✓ The Utility Manager will be a facilitator, coach, mentor and coordinator with a high degree of interpersonal skills. The majority of tasks within the Division will be accomplished through the efforts of private and public service providers, integrated service teams and contract administration.

Engineering

- ✓ The skill set required by the Engineering group will focus on project coordination and contract administration. Interpersonal skills, communication and team leadership skills will be essential as more tasks will be accomplished with the inclusion of stakeholder and community based groups. This approach is essential as Environmental stewardship will be achieved through innovative approaches, which will include community based partnerships and the reduction of traditional regulator barriers.

- ✓ Capital projects will be accomplished through the tendering process. Selection of a contractor will be based on which company provides the best combination of competitive pricing, minimal impact on the general public and environmental sensitivity.

Operations

- ✓ Operations Managers will be team leaders with strong interpersonal and communication skills that will meet their assigned tasks through a combination of internal and external service providers. Decisions will be based on a service delivery analysis and business plans that focus on the best overall service to the public.

- ✓ A technical assistant will be required to assist the operations Managers in developing and administering service contracts, prepare detailed plans, tenders, develop maps and record accomplishments. This will be the cornerstone of performance coaching.

- ✓ Many of the Operation and Maintenance (O & M) functions, such as, Catch Basin cleaning and trenchless repairs will occur during the off hours in-order to minimize disruption to the traveling public. The operations group will consist of a skilled flexible work force.

- ✓ There will be mandatory certification for all distribution and collection system operators consistent with the Environmental Operators Certification Program. The operator will be considered to be a skilled tradesman.

- ✓ Operational efficiencies will continue to be realized through the application of equipment and technological advances (eg. grouting, robotics & trenchless repairs, etc.)

- ✓ A multidiscipline team with impeccable public relations skills will handle responses to daily enquiries and customer service requests. They will be well trained and undertake a variety of tasks that will include, but are not limited to water, sewer and road repairs or solid waste collection.

- ✓ Internal construction crews will continue to provide repair and rehabilitation expertise. The crews will be given greater flexibility in their tasks in-order to reduce overall costs. It will be important to maintain a strong internal force in-order to counter the external providers desire to increase profits at the expense of the tax payer.

- ✓ Operational service tasks will be developed with a Regional perspective in mind in-order to take advantage of economies of scale. We will offer our specialized services and expertise, such as lateral relining, pipe-bursting and SCADA applications, to other municipalities on a fee for service basis.

Sustainability and Productivity

- ✓ The Division will develop Operations and Maintenance requirements using the Best Management Practices, as developed by the National Guide to Sustainable Municipal Infrastructure, in conjunction with applicable Health and Environmental regulations and recognized standards and manuals of practice.

- ✓ The Division will continue to use Benchmarking as a tool in determining operational efficiencies.